BRIEFER ARTICLES.

ORIGIN OF TIMBER BELTS.

In the north central part of Kansas along the Republican river in Clay and Cloud counties, the streams are bordered by narrow interrupted belts of timber. These belts are from a few rods to half a mile in width. The region is near the border line of the great plains, east of the Rocky mountains, where trees are almost entirely absent. Until recently the country was swept annually by devastating prairie fires, and it was only on the sandbars, on the inner side of the river bends where the sedimentary deposits were comparatively free from herbage, that young trees had any chance of surviving. In the region studied, the Republican river passes through the Dakota sandstone, and its bed is very sandy. During overflows the lower portions of the bends are covered by a layer of sand and rich organic detritus, affording an immediate substratum for the vigorous development of young trees, while at the same time the growth of grass and weeds is almost entirely checked because they are partly or completely covered up by the deposits.

The succession of woody plants is as follows: Along the water's edge or at the outer margin of the sandbars, there first grows up a zone of the common long-leaved willow, *Salix longifolia* Muhl. As this advances with the growth of the bar, it is replaced by the black willow, *Salix nigra* Marsh. The black willow finally gives way to a thick growth of cottonwood, *Populus monilifera* Ait. All young timber belts are therefore made up of three zones:

1. A zone of *Salix longifolia* Muhl., generally several rods in width.
2. A strip of *Salix nigra* Marsh, usually a narrower zone than the first.
3. A wide zone of *Populus monilifera* Ait., which makes up the timber belt proper.

I have had some of these young timber belts under observation for nearly twenty years, some from their very beginning, and I find that it is only after the cottonwood has formed a rather thick forest of good-sized trees that other trees common to the region begin to take posses-

sion of the soil. In the limestone region in the southeastern part of Clay county, there are several species of trees which do not pass over into the sandstone district. The trees which finally crowd out the cottonwood are few in number and are of the following species: *Negundo aceroides* Moench, *Gymnocladus Canadensis* Lam., *Gleditschia triacanthos* L., *Cercis Canadensis* L., *Fraxinus viridis* Mx., *Ulmus fulva* Mx., *Ulmus Americana* L., *Celtis occidentalis* L., *Morus rubra* L., and *Juglans nigra* L. Thus, in the older forests, the cottonwood trees stand here and there as solitary giants, crowded on all sides by the newer occupants.

There seems to be good evidence that these timber belts never advanced outward from the river, but rather that fire and prairie grass were continually encroaching upon the forest areas, restricting them to narrow belts along the river, although the river bottoms in some places are several miles in width.—JOHN H. SCHAFFNER, *Columbus, O.*

THE SPREADING OF BUFFALO GRASS.

I HAVE several times read the statement that the buffalo grass, *Buchloe dactyloides* Engelm., is being crowded out and exterminated in regions which have been settled for some time. This does not agree with my own observations, which extend through a period of over twenty years in Clay county, Kansas, a region where this grass is quite common, although it occurs only in small patches here and there in the prairie. Of course, the sum total in a given region would be less at the present time than formerly on account of the great areas now under cultivation. But in the pastures the grass has spread considerably. I know of patches which are at present from six to ten times their original area twenty five years ago when the country was first settled. There are also many places, formerly destitute of buffalo grass, which are now practically covered with it, other species being crowded out.

This increase of the buffalo grass in the pastures is without doubt due to the continual tramping of cattle, which destroys the other common prairie-grasses but does not seem to be injurious — rather beneficial — to the buffalo grass.

I also know of a patch in a yard which has remained a thick sod for twenty five years, while all the other grasses have long since been destroyed and their place taken by weeds and introduced grasses.

In the region under consideration, the buffalo grass usually grows